Fuwa® VALX

TPRS*

WORKSHOP MANUAL
TYRE PRESSURE REFILL SYSTEM

*by P.S.I. THE INFLATION SYSTEM CELERITY® CDRS

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Index of Abbreviations

ADR	Accord européen relatif au transport international des marchandises Dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
ATIS	Automatic Tyre Inflation System
CMP	Control Box
DRS	Drag Reduction Systems
NPT	National Pipe Thread
OEM	Original Equipment Manufacturer
PA	Polyamide
PSI	Pressure Systems International
PTFE	Polytetrafluoroethylene (Teflon)

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1. Important Customer Information

Dear Customer

We are happy to provide you with an Automatic Tyre Inflation System (ATIS) from Pressure Systems International (PSI). The system will help you to increase the road safety, the environmental friendliness and the profitability of your vehicle.

The current manual is only applicable for VALX axles and will give you an overview about the product and proper usage. Please read this manual in full. Included is also security information and important notes for the correct handling. By observance of these notes its uptime and the lifetime also is optimised.

The manual should be accessible for the vehicle user at all times and therefore you should store it in the vehicle.

With best regards

Your Celerity DRS Team

* *Information contained in this publication was in effect at the time the publication was approved for printing and is subject to change without notice or liability. Celerity DRS GmbH, reserves the right to revise the information presented or to discontinue the production of parts described at any time.*

2. General Information

This manual is designed for the user to understand the function, the structure and also how to operate the system. The included guide for the installation and the initial operation is limited to the use by the vehicle manufacturer or via a verified partner and by trained professionals. Celerity DRS advises, that all pressure changes and the maintenance should be done by a verified partner and by trained professionals.

Please read the manual carefully! Failure to follow the warnings and instructions may result in personal or property damages.

2.1. Safety Icons

This manual uses different icons in order to identify important information. It is necessary to read and to observe this information carefully.

This icon indicates the vehicle must stop as soon and safely as possible.

This icon warns for possible safety risks to both persons and property.

This icon identifies special installation requirements. Non-compliance could lead to personal and property damages and also to malfunction or damage of the system.

This icon gives important or useful information for the installation, increased efficiency and increased life-time of the system.

2.2. Safety Information

Warning:

- **Please read the manual carefully! Failure to follow the warnings and instructions may result in personal and property damages.**
- **Save this manual for future reference!**

2.2.1. General

Warning:

- **Physical alteration of the system is not permitted without notifying Celerity DRS GmbH. All required changes on the system must be confirmed in writing to Celerity DRS GmbH.**
- **Painting of the ATIS parts is not permitted.**
- **Transportation and storage should be done in the original packaging and kept cool and dry.**
- **The axle of a semi-trailer or a trailer is a safety-relevant part. For that reason, the installation should be done only via the vehicle manufacturer or via a verified partner and by trained professionals.**
- **The system works with compressed air. For that reason, safety glasses must be worn during the installation and also during maintenance at a later time.**
- **Damaged or missing parts must be replaced immediately by a verified partner and by trained professionals.**
- **Before working on the system, the safety valve (7) must be closed and the air in the system must be released via the pressure relief valve (4) or check port (6) at the control box. (See chapter 3.3.1 at page 12.)**
- **Axle kits are supplied for VALX axles. Kits must not be used for non-corresponding axle types.**
- **An inlet pressure of minimum 6 bar is required for a working system.**
- **The system is working when the inlet pressure is between 6 bar and 11 bar.**

- **Excessive air will be released from the control box via the regulator (2), rubber air outlet (9) and/or pressure relief valve (4). (See chapter 3.3.1 at page 12.)**
- **Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands. Do not work under a vehicle supported only by jacks. Jacks can slip and could cause serious injury or fatality.**
- **Verify that the vent holes in the hubcap are not blocked. Blocked vent holes will prevent system air from venting from the wheel end. Serious personal injury and damage to components can result.**
- **Test the tyre inflation system for air leaks before you place the vehicle into service. Spray a non-corrosive leak detection solution on all fittings and connections (this can be soapy water). Listen for audible leaks and check for bubbles. If you detect a leak, identify the source and replace parts as required. Air leaks in the tyre inflation system can cause damage to components during operation.**

2.2.2. Traffic

Warning:

- **The driver's duties regarding their walk round check of the vehicle before departure remain the same.**
- **Check if the safety valve is open and so the function of the ATIS is given.**
- **Check the tyre conditions for outer damages and sufficient tread depth.**
- **An incorrect set pressure can lead to an increase in tyre wear and fuel consumption and in the worst case to the blow-out of a tyre.**

2.2.3. Installation

Warning:

- **An incorrect installation could cause serious issues and even lead to the loss of the operating license. As a consequence, there could be personal and property damages.**
- **All installation locations must be checked before drilling that there is no power supply, air lines or load bearing parts in the way.**
- **A pressure of 9.2 bar is pre-set at the control box unless specified.**
- **There must be at least a 5 cm gap between the rubber air outlet (9) and the chassis of the trailer. (See chapter 3.3.1 at page 12.)**
- **The rubber air outlet must be not pushed in.**
- **To secure the seal tightness at the cable gland, a round cable with a diameter of 6-10 mm must be used.**
- **The ADR-guidelines must be observed for the cabling of ADR-vehicles.**
- **The connection cable to the control box must be installed so that it is protected from the threat of any damages.**
- **All threads must be free of dirt, greases or oils.**
- **The air line must be installed, so that it will not be subject to damage, kinking or rubbing against other lines and/or objects.**
- **At the installation of the air line there must be enough slack for the possible movement of the trailer axle (spring extension and compression).**
- **Before working on the air line, the air circulation system must be deflated and the safety valve (7) closed. (See chapter 3.3.1 at page 12.)**
- **The filter of the stator must not be broken off or hanging loose from stator tube, if the filter is broken off or hanging loose from the stator tube, it must be replaced.**
- **An incorrectly installed hubcap can damage the stator and the rotor. This could lead to extensive wear on the O-rings with malfunctioning at an early stage (leaking).**
- **The rotor has to be installed after the hubcap. The installation of the hubcap together with the rotor can lead to damages of the rotor and the O-ring of the stator, which may cause leakages.**
- **The needle of the rotor must be aligned with the stator.**

- **The Tyre hose must not be kinked, cover the wheel nuts or sit outside the confines of the wheel arch.**
- **A damaged tyre hose can lead to a complete deflation of the tyre.**
- **Do not overtighten the tyre hose connections, this may damage the hose seal and cause a tyre to deflate when the trailer is parked. Damage to components can result. (See chapter 4.3. at page 17.)**
- **Only use the approved press plug for the VALX axle. A wrongly used press plug can lead to personal and property damages.**
- **Only use installation tools approved by PSI. Non-approved tools can result in damage to the components.**
- **Only use the approved retaining compound when you install the axle press plug. Only apply retaining compound to the OUTSIDE diameter of the axle press plug. Do not apply it to the inside diameter of the spindle bore, axle press plugs stator threads or axle spindle threads. Damage to components can result. (See chapter 4.11. at page 27.)**

2.2.4. Initial Operation

Warning:

- **Before the system is put into operation all of the parts must be checked for any damages or leakages. Also, the pressure of the control box and all of the tyres must be checked.**
- **The pressure setting at the pressure control valve must be 0,2 bar above the tyre manufacturer's recommended tyre pressure, to compensate the opening pressure of the pressure valves.**

2.2.5. Operation

Warning:

- **When the warning light has been active flashing over a longer time period (10 minutes) in a high frequency the system may not be in operation, all tyres and the system must be checked by an authorised workshop.**

Stop:

- **When the warning light is constantly illuminated, the driver must stop as soon as possible. The system is not able to compensate the air leakage anymore. There is then danger of a blow-out.**

2.2.6. Maintenance

Warning:

- **The number of maintenance intervals must be increased when there are extreme operating conditions related to weather and terrain.**
- **A non-compliance of the maintenance intervals will lead to the loss of the guarantee.**

2.3. General Terms and Conditions and Guarantee

The current general terms and conditions including the guarantee conditions of Celerity DRS GmbH can be downloaded from our website www.celeritydrs.com.

2.4. Liability

The ATIS of PSI is subject to the current general terms and conditions of Celerity DRS GmbH.
Celerity DRS GmbH takes over no liability by personal or property damages, which are due to the following causes:

- Use of the system which is not appropriate.
- The manual and the safety information not being observed.
- Physical alteration of the system.
- Poor maintenance of the wear parts.
- Use of damaged parts.
- In-appropriate installation of the system.
- Use of non-authorised aftermarket parts.
- Any disaster due to outside influence or an act of nature.

2.5. Disposal

To protect our environment, during the installation or maintenance intervals waste material, e. g. parts, and operating supplies must be disposed correctly.

All recyclable waste material, free of special waste like oil and grease, must be reused where possible. All special requirements such as EU-regulations and regional regulations must be observed.

3. Product Description and Specifications

3.1. Appropriate Use

The manufacturing of the product is done with the latest state of the art equipment, whereby the primary focus is on safety. Despite this there could occur dangers for persons and property by using the product.

The ATIS by PSI is only designed and approved for the tyre pressure control on heavy duty semi-trailers and trailers. The system ensures, that the tyre pressure of the semi-trailers and trailers is constantly at or above the minimum cold pressure setting, which is pre-set depending on the load and the tyre specification. The driver will be notified of the air supply, via a warning light fitted to the semi-trailer or trailer in the viewing area (driver side rear view mirror) of the driver.

The warning light will flash with differing speeds depending on the severity of the air leak. In the event that the warning light is flashing almost continuously, the vehicle must stop as soon as possible and the tyres and the system must be checked. Depending on the axle-type there are different product configurations. The single product configurations are allowed only for use with the associated axle.

Also related to appropriate use:

- The manual and the included working steps must be observed.
- The guidelines for the installation must be followed.
- The guidelines for the checks must be followed.
- The guidelines for the environmentally sound disposal must be followed.

Only when all of the valid system settings, are observed, a reliable use can be ensured.

3.2. In-Appropriate Use

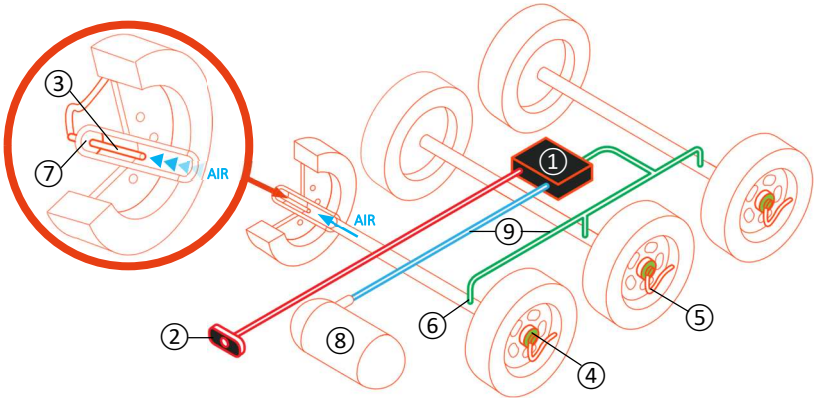
The ATIS by PSI is only designed and approved for the tyre pressure control on heavy duty semi-trailers and trailer designed only.

Related to the in-appropriate use counts also:

- Filling or pressurising of facilities, tanks or parts, which are not belonging to the ATIS of PSI.
- Usage of the ATIS as a tyre pressure regulation system.
- Usage of kits for non-corresponding axle types.
- Installation by non-authorised workshops or professionals.
- All non-recommended applications.

3.3. System Construction

Figure 1: System Construction



Components:

1. Control Box
2. Warning Light
3. Stator
4. Rotor
5. Tyre Hose
6. Axle-Inlet
7. Press Plug
8. Air Supply*
9. Air Line*

*Described components are not included in the delivery contents.

3.3.1. Control Box

The control box includes the following components:

① Step-up pump:

The step-up pump increases the incoming air pressure by a factor of 1.7, until the requested outlet pressure is achieved.

② Generator:

The Generator illuminates the warning light when the system delivers air to either a leaking tire or a leaking tire inflation system component. Depending on the amount of air, the light will flash at a different speed.

③ Pressure protection valve:

The pressure protection valve ensures that air is available for other trailer functions and maintains air tank pressure if a tire or a tire inflation system component is damaged.

④ Pressure relief valve:

The pressure relief valve will open automatically at a pressure of over 11.2 bar, to avoid an overpressure inside the tyre/system.

⑤ Pressure control valve:

The pressure control valve is used to adjust system air pressure as the system air pressure should be adjusted to the customer's recommended tire pressure.

⑥ Check-port:

The check-port is used to manually exhaust pressure from the tire inflation system, which enables you to perform maintenance on either the trailer axle components or the tire inflation system. Furthermore, it allows an easy check of the outlet pressure by connecting a pressure gauge.

⑦ Safety valve:

The safety valve allows air delivery to the system and also stops the air delivery to the system.

⑧ PG11-connector:

The PG11-connector is used to install the warning light at the control box.

⑨ Rubber air outlets:

The Rubber air outlets are used to exhaust not needed air to the environment

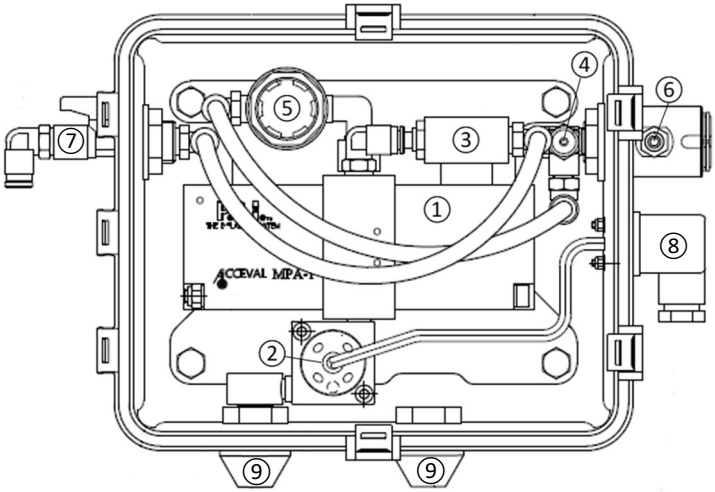


Figure 2: Control Box Components

3.3.2. Warning Light

A warning light mounted to the trailer comes ON when the system delivers air due to a leaking tyre or tyre inflation system component.

Figure 3: Warning Light

3.3.3. Stator and Rotor

The stator is located inside the axle spindle and the rotor is attached to the hubcap. Pressurised air passes from the stationary axle interior to the rotating hub through a needle extending from the rotor into the stator. Dynamic seals, located in the rotor and stator, allow rotation without loss of air pressure. The deflector shield at the rotor helps prevent any contaminants such as dirt and water from entering the wheel end. The particulate filter at the end of stator removes contaminants from the air system.

Figure 5: Stator

Figure 4: Rotor

3.3.4. Tyre Hose

The hose is a flexible valve stem extension which mechanically opens the tyre valve core and allows air to pass into a tyre. A check valve located at the knurled end of the hose allows air to flow in only one direction-towards the tyre, which protects each tire from loss of air pressure if the tyre inflation system, or any tyre, loses air pressure during operation.

Figure 6: Tyre Hoses

3.3.5. Axle-Inlet

The axle-inlet is the connection between the control box and the axle/stator. For the pressurised VALX axles, an axle-inlet will be mounted on the axle beam. The axle-inlet is normally an elbow hose-connector. A straight hose-connector can be used as well, depending on the axle version. The axle-inlet directs the air from the control box into the axle beam.

Figure 7: Axle Inlet

3.3.6. Press Plug

The axle press plug is used in the VALX axles, because it has hollow spindles. It seals off the pressurised axle interior from the wheel end and provide a means of holding and securing the stator.

Figure 8: Press Plug

4. Installation

The following Chapter is concerned with the installation of the automatic tyre inflation system. The described working steps must be followed and the notes must be observed.

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

Note:

- **VALX axles have a spindle that's integrally formed out of axle tube material. A welsh plug is pressed into a machined recess in the end of the spindle.**

4.1. Tools – Overview

Note:

- **If special tools and supplies are specified in this manual, please contact Celerity DRS for more information.**

Table 1: Tools-Overview

Part	Required Tool	Tool Size
Stator	Torque Wrench	16 mm
Tyre Hoses	Wrench	11 mm
Warning Light	Cross Tip Screwdriver	Small
PG11-Adaptor	Slotted Screwdriver	Small
Axle-Inlet	Wrench	11/14 mm
Press Plug	Slide Hammer	Welsh Plug Removal Spear; Press Plug Remover
Press Plug	Driver Handle, Driver Adapter	See chapter 4.2.

4.2. Drive Adapter / Drive Handle– Overview

Table 2: Drive Adapter - Overview

Part	Part Number
Adapter	TL-DRA-135-XX-XX
Handle	TL-DRH-XXX-XX-XX

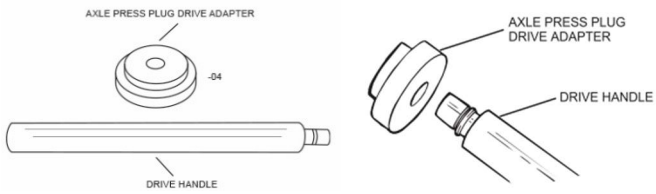


Figure 9: Drive Adapter Assembly

4.3. Torque – Overview

Table 3: Torque - Overview

Part	Torque
Stator	40 Nm ± 5 Nm
Rotor	Hand tight (min. 6 Nm)
Axle Inlet	Hand tight
Tyre Hose / Tyre Valve	Hand tight + ½ turn with a wrench.
Tyre Hose / Rotor	Hand tight (5 Nm)

4.4. Axle Inlet – Overview

Table 4: Axle Inlet - Overview

Part	Thread Size - Part	Thread Size - Axle
Axle inlet	R ⅛	G ⅛

4.5. Press Plugs – Overview

Table 5: Press Plugs - Overview

Part Number	Diameter
FT-PPA-035-OR-VL	35 mm

4.6. Installation Control Box

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**
- **It is essential that the rubber exhaust at the bottom of the control box is not pressed up against the chassis and has at least 50mm space free underneath, this is so that it can safely emit residual air that is used to pump up the pressure.**

Note:

- **The lid of the CMP must be accessible for any maintenance. Therefore, it must be possible to open the lid.**
- **Excess air will be released from the control box.**

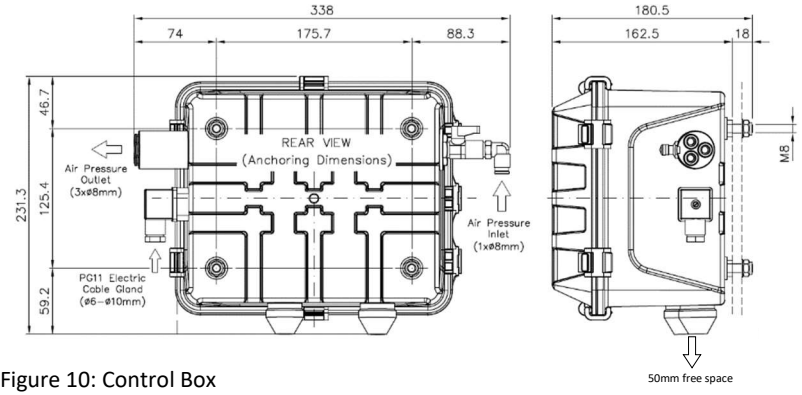


Figure 10: Control Box

Procedure:

1) For the mounting of the control box the holes must be drilled in accordance with the previous drawing at the installation stage.
2) The installation location must be protected but still accessible.
3) Mounting of the control box must be carried out with the included screws.

4.7. Installation Warning Light

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

Note:

- **The warning light should be installed in the viewing area (driver side rear view mirror) of the driver.**
- **The connection cables required to connect the warning light with the control box are not part of the delivery contents.**
- **The cable ties required to install the connection cable are not part of the delivery contents.**
- **The warning light is available in the colors red and violet.**
- **Cable colour: Black (+, 2) / White (-, 1).**

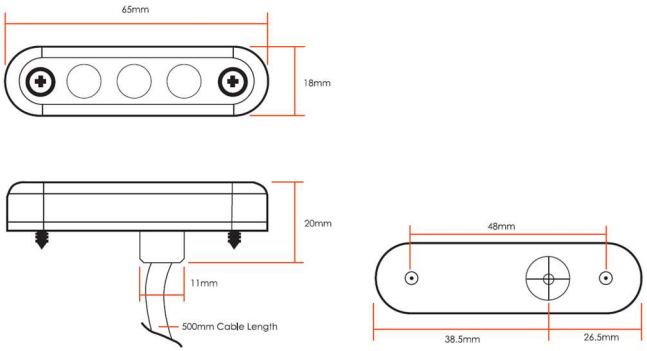


Figure 11: Warning Light

Procedure:

1) For the mounting of the warning light the holes must be drilled in accordance with the previous drawing at the installation stage.
2) Installation of the warning light should be in the viewing area (driver side rear view mirror) of the driver.

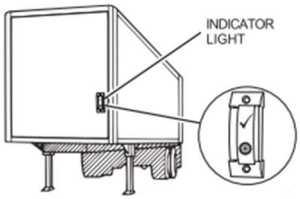


Figure 12: Sample Location Warning Light

3) The connection cable to the control box should be installed in accordance of the below drawing.
4) Create a leakage to test the warning light by releasing the pressure relief valve on top of the air pressure outlet.

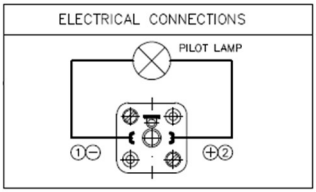


Figure 13: Electrical Connections Warning Light

4.8. Installation Axle-Inlet

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

Attention:

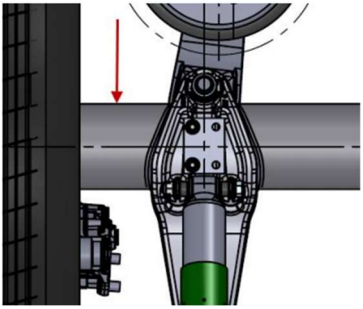
- **Tighten it with a torque wrench and a torque of 5 Nm.**
- **Do not drill into the axle at an angle. Make sure the drill is straight to avoid a damage to the axle.**
- **Use a puncher to mark the drilling location before drilling.**
- **Use cutting oil to ensure a smooth drilling of the axle beam.**

Note:

- **The drilled hole has to be on the center line from the axle beam, horizontal and between the air suspension and the brake.**
- **Make sure that the drilled hole will be horizontal when the vehicle is in riding height position.**

Procedure:

1) Mark drill location.



2) If no prepared axle is available, drill a hole with Ø 8.7-8.8 mm in the centre of the axle beam.

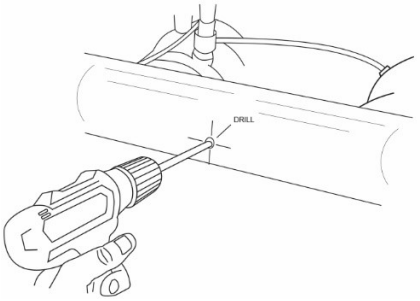


Figure 14: Drilling Axle Centre

3) Use a G1/8 tap to thread the drilled hole.

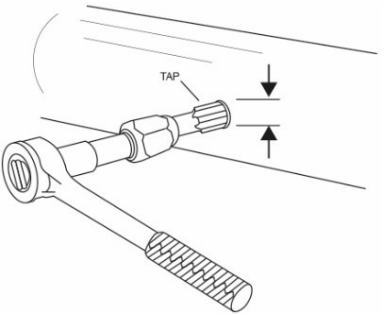


Figure 15: Tapping Drilled Hole in Axle

4) Cover the thread of the axle-inlet with sealant (e. g. PTFE-sealing tape) if necessary.
5) Screw in the axle-inlet, align and tighten it up.
6) Align the axle inlet.

4.9. Installation Air Line

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

Note:

- **The air lines (8x1/2/3 mm PA12-hose) required to conduct air to axles are not part of the delivery contents.**
- **The hose thickness will influence the stiffness, cutting and grip properties of the hose.**
- **The cable ties required to install the air line are not part of the delivery contents.**

Procedure:

1) Measure out the air line and install under the vehicle.
   (Air Supply -> Control Box; Control Box -> Axle)
2) Install air line at the control box.

4.10. Installation Press Plug

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

Attention:

- **Use latex gloves to protect your skin.**
- **Use only PSI approved press plugs and installation tools. (See chapter 4.1 till 4.5 at page 16)**

- **Loctite® 620, 3M® RT20 and PermaBond® HH 0040 are all approved retaining compounds.**
- **The tyre inflation system can be pressurized 30 minutes after installation of the axle press plug.**
- **Axle press plugs are not reusable. New axle press plugs must be installed.**

Procedure:

1) Remove the hubcap.

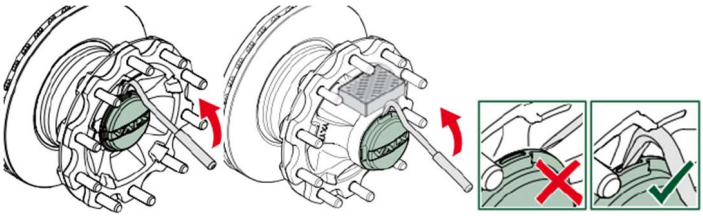


Figure 16: Hubcap Removing

2) Remove the spindle welsh plug with a slide hammer fitted with the welsh plug removal spear, be careful not to score the inside diameter of the spindle bore.

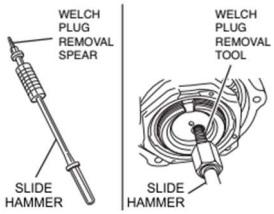


Figure 17: Welsh Plug Removal

3) Polish the spindle bore to remove all adhesive residue left from the old press plug and any metal burrs or sharp edges from the spindle bore surface.

4) Clean the surface and remove all debris, including loose rust, scale, liquid and machining residue.

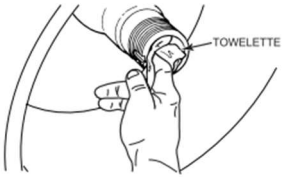


Figure 18: Axle Spindle Cleaning

5) Clean the exposed O-ring surface and outside diameter surface of one axle press plug. Protect the clean plug from additional contaminants.
6) Apply only the approved retaining compound evenly to the OUTSIDE diameter of the axle press plug. The axle press plug must be installed within 10 minutes of applying the retaining compound to ensure that the compound hardens correctly.

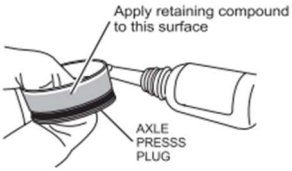


Figure 19: Retaining Compound Application

7) Insert the axle press plug into the spindle bore by hand until the plug stops in the bore.

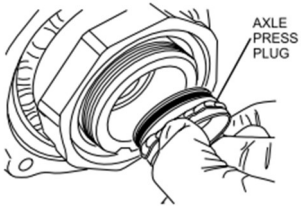


Figure 20: Axle Press Plug Installation

8) Insert the axle press plug drive adaptor + drive handle into the axle press plug.

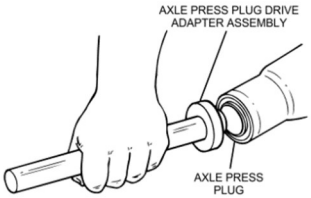


Figure 21: Using Drive Adapter Assembly

9) Use a four-pound brass or synthetic mallet to drive the axle press plug into the spindle bore, until the drive adaptor bottoms out squarely on the end of the spindle. The drive adaptor sets the axle press plug installation depth. There will be a definite change in the sound and feel of the hammering when the drive adaptor bottoms out.

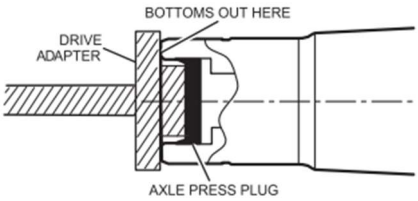


Figure 22: Axle Press Plug Installed

10) Wipe off all retaining compound residue from the spindle and axle press plug drive adaptor.

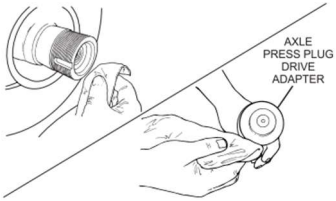


Figure 23: Removing Residue

4.11. Installation Stator

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

Attention:

- **Tighten it with a torque wrench and the axle specific torque. (See chapter 4.3. at page 17.)**

Procedure:

1) Check the filter for damages and dirt before installation.
2) Cover the thread of the stator with sealant (e. g. PTFE-sealing tape) when reinstalling a stator which is used before.

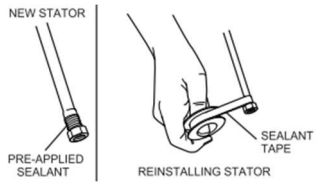


Figure 24: Stator Sealing

3) Screw in the stator and tighten it up. (See chapter 4.3 at page 17.)

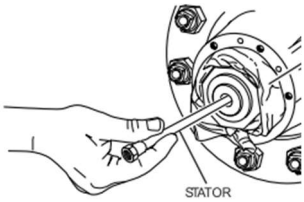


Figure 25: Stator Installation

4.12. Installation Hubcap

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

Attention:

- **Install the hubcaps regarding the specific requirements of VALX.**
- **Use only the genuine VALX PSI hubcap with an integrated hubcap-adaptor.**
- **Use only VALX approved Lithium complex class 2 grease.**
- **Please ensure that the rotor is not installed during the hubcap installation/de-installation.**

Procedure:

1) Put the O-ring in the hub O-ring groove and put some grease on the O-ring.

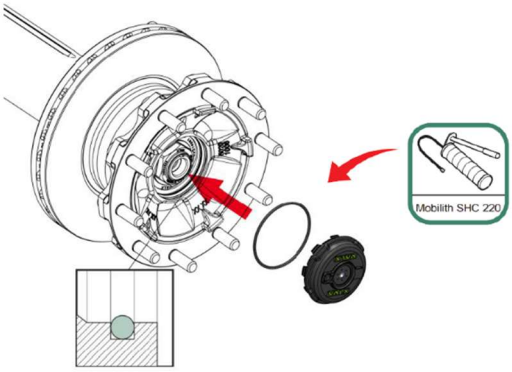


Figure 26: Installation Hub O-ring

2) Push the hubcap past the O-ring by hand. You will feel a light resistance until the hubcap passes the O-ring.
3) Turn the hubcap to be sure it did pass the o-ring and to check if the o-ring is still positioned in the groove.

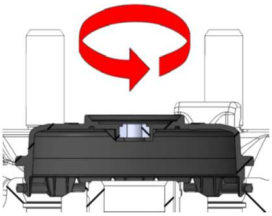


Figure 27: Hubcap Installation

4) Hit the hubcap with a recoil free hammer. It is only allowed to hit the hubcap on the green marked places in the picture below.

Figure 28: Hubcap

5) Make sure there is no gap between the edge of the hub cap and the hub flange.

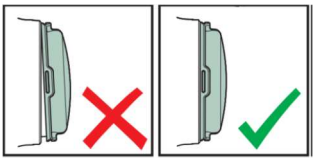


Figure 29: Correct Hubcap Installation

4.13. Installation Rotor

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

Attention:

- **Tighten it with a recommended torque of max. 6 Nm.**
- **Make sure that the PSI rotor is always installed to prevent water getting into the hub.**
- **Ensure there is no gap between the deflector shield and hubcap/hubcap adaptor.**
- **Please ensure that the rotor is not installed during the hubcap installation/de-installation. (See chapter 4.12 at page 28.)**

Procedure:

1) Insert the rotor needle into the stator.

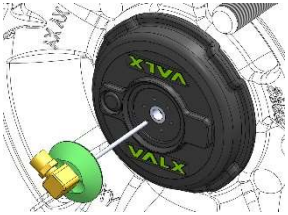


Figure 30: Rotor Installation

2) First, screw in the rotor to the hubcap by hand.

Figure 31: Screw in Rotor

3) Secondly, tighten the rotor.

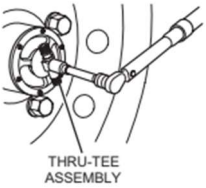


Figure 32: Tighten the Rotor

4) Use a 24mm wrench to obtain a good orientation of the rotor, hose and tyre valve by rotating the hubcap.

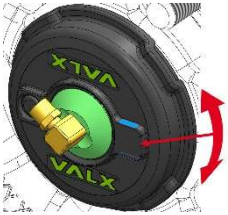


Figure 33: Rotor Alignment

5) Check if the assembly is correctly fitted by visual inspection.

4.14. Installation Tyre Hose

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

Attention:

- **The Tyre hose must be hand tightened (no tools needed) at the rotor.**
- **The Tyre hose must be firstly hand tightened and afterwards tightened with ½ a turn of a wrench at the tyre valve.**
- **There must be between 12-15 mm at the top of the tyre valve, so that there is the same depth as the thread to ensure a tight fitting.**

Note:

- **Function test of the tyre hose -> Install the tyre hose at the tyre valve and push down the integrated valve in the tyre hose, at this point air should stream out.**

Procedure:

1) Install tyre hose at the tyre valve. (See chapter 4.3 at page 17.)

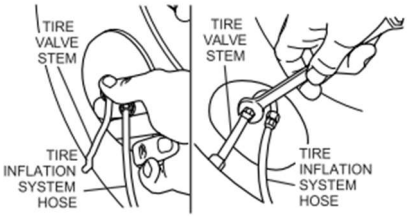


Figure 34: Tyre Hose Installation

2) Function test of the tyre hose.

Figure 35: Function Test Tyre Hose

3) Install tyre hose at the rotor. (See chapter 4.3 at page 17.)
4) Check tyre valve for leakages!

5. Initial Operation

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

5.1. Check Set Pressure

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

Note:

- **The usage of a digital calibrated gauge is highly recommended.**

Procedure:

1) Remove the cap of the check port of the control box and connect the gauge.
2) Read the pressure from the gauge.
3) Remove the gauge and release the air via the check-port.
4) After the pumping process, reconnect the gauge and the pressure can be read.
5) Repeat the checking process two times.
6) Remove the gauge and re-install the cap.

5.2. Adapt Set Pressure

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

Note:

- **The usage of a digital calibrated gauge is strongly recommended.**

Procedure:

1) Remove the cap of the check-port of the control box and connect the gauge.
2) Read the pressure from the gauge.
3) Remove the gauge and release the air via the check-port.
4) After the pumping process, reconnect the gauge and the pressure can be read.
5) Set the correct tyre pressure:

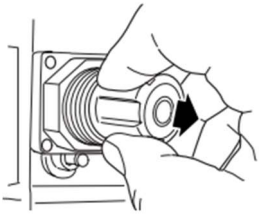


Figure 36: Pressure Control Valve Knob

   a. For reduction of the pressure, pull out the adjustment knob of the pressure control valve and turn in small steps counter clockwise.
   b. For increase of the pressure, pull out the adjustment knob of the pressure control valve and turn in small steps clockwise.
6) Remove the gauge and release the air via the check-port.
7) After the pumping process, reconnect the gauge and the pressure can be read.

8) Repeat the checking process two times.
9) Lock the pressure control valve by pushing in the adjustment knob.
10) Close the lid of the control box.
11) Check the pressure again with the pressure gauge after closing the lid. If the pressure is correct proceed with the next step, otherwise repeat the sequence.
12) Note the changed pressure. (See chapter 10. at page 43.)

5.3. Function Warning Light

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

Note:

- **A flashing warning light signifies that the system is in use, and can compensate the air loss.**
- **Check that the light is in working order before usage, test with the release of air from one of the hoses, if the light flashes when the pump pulsates to compensate for the air - it is operational.**

5.3.1. Flashing Warning Light

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

Procedure:

1.) In the event of a flashing warning light, the driver can continue with their journey in a safe way.
2.) Tyres and the system must be checked when stopped.

5.3.2. Lighted Warning Light

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

Procedure:

1) When the warning light is constantly illuminated, the vehicle must stop as soon as possible.
2) Damages from the air loss must be repaired before continuation of the journey by an authorised workshop.

6. Tyre Change

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

Attention:

- **The Tyre hose must be hand tightened (no tools needed) at the rotor.**
- **The Tyre hose must be firstly hand tightened and afterwards tightened with ½ a turn of a wrench at the tyre valve.**

Note:

- **Function test of the tyre hose -> Install the tyre hose at the tyre valve and push down the integrated valve in the tyre hose, at this point air should flow out.**

6.1. Disassembly

Note:

- **The tyre hoses can be removed without releasing air from the system, if the disassembly is done in the correct order.**

Procedure:

1) Loosen the tyre hose from the rotor.
2) Loosen the tyre hose from the tyre valve.
3) Change the tyre in accordance to the manufacturer guidelines.

6.2. Assembly

Procedure:

1) Connect tyre hose at the tyre valve. (See chapter 4.3 at page 17.)
2) Function test of the tyre hose.
3) Connect tyre hose at the rotor. (See chapter 4.3 at page 17.)
4) Check tyre valve for leakages!

7. Overview Spare Parts

Note:

- **The genuine VALX hubcap is also available at VALX (www.valx.eu).**

An overview with all necessary spare parts for your system can be requested by all verified partners or directly from Celerity DRS.

Celerity DRS advises to use only original spare parts of PSI. The impact of non-authorised spare parts on the uptime and possible risk and dangers cannot be judged by Celerity DRS. Therefore, the use of non-authorised spare parts will result in the loss of guarantee.

8. Maintenance

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

8.1. Before Departure

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

Procedure:

1) Incorporated in driver's walk round they must check for damages to wheel end components.
2) Check the safety valve (7) of the control box. The safety valve (7) must be open. (See chapter 3.3.1 at page 12.)

8.2. Maintenance Interval

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

To guarantee the function and durability of the system, it must be regularly checked.

In order to adhere to guarantee, the following check intervals must be observed:

Table 6: Maintenance Interval

Optical Check	
Rotors	Before Departure
Tyre Hoses	Before Departure
Safety Valve (open)	Before Departure
Electric Cable	Yearly
Air Line	Yearly
Function Test	
Check set pressure of the control box. -> First time after installation (See chapter 5.1. at page 34).	Within 6 Month after installation and afterwards yearly.
Check warning light. -> First time after installation (See chapter 4.7. at page 19).	Yearly
Check the total hubcap for leakages (soapy water test). -> First time after installation.	Yearly

9. Diagnostics

Warning:

- **Please read all safety information which can be found in chapter 2.2.**
- **A non-compliance can lead to personal and property damages!**

Table 7: Diagnostics

Condition	Possible Causes	Actions
The warning light is ON.	a. The system is delivering air during initial system charging. b. The system is delivering air to a leaking tire. c. The system is delivering air to a leaking system component. d. The system is delivering air to a cracked axle. e. The system wiring is incorrect.	a. The system is functioning correctly. b. Repair the tyre. c. Replace the system component. d. Replace the axle. e. Correct the system wiring.
The warning light is ON and air is leaking from the wheel-end rotor.	a. The system is delivering air to a leaking system component. b. The rotor is leaking. c. The stator O-ring is leaking. d. The stator threads are leaking e. The axle press plug is leaking.	a. Replace the system component. b. Replace the rotor. c. Replace the stator. d. Seal the stator threads. e. Replace the axle press plug.
The warning light is OFF during system operation, with air flowing through the control box.	a. The warning light is inoperative. b. The generator is inoperative. c. The system wiring is damaged. d. The system wiring is incorrect.	a. Replace the warning light. b. Replace the generator. c. Repair the system wiring. d. Correct the system wiring.
Air is leaking from the wheel-end rotor.	a. The rotor is leaking. b. The stator is leaking. c. The stator threads are leaking. d. The axle press plug is leaking.	a. Replace the rotor. b. Replace the stator. c. Seal the stator threads. d. Replace the axle press plug.
Tyre pressure is low.	a. The safety valve is closed. b. The system pressure setting is too low.	a. Open the safety valve at the control box. b. Increase the system pressure setting.

Condition	Possible Causes	Actions
Tyre pressure is high.	a. The tyre is manually over inflated b. The system pressure setting is too high.	a. Reduce the tyre pressure. The system will inflate to the correct level. b. Lower the system pressure setting.
The trailer deflates when parked.	a. The system hose or tyre valve stem connection is leaking. b. The hose valve core is leaking. c. The tyre is leaking.	a. Correctly tighten the connection, replace the seals or replace the valve stamp. b. Clean or replace the hose valve core. c. Repair the tyre.
The tyre is slow to inflate or no air flows to the tire.	a. The hose connection to the valve stem may have been overtightened, blocking air flow.	a. Correctly tighten the connection or replace the hose or seal if it is damaged.

10. Pressure Change

Table 8: Pressure Change

Set Pressure	Reason	Date and Sign

11. Drilling Templates

For an easier installation of the control box and the warning light you can use our drilling templates.

11.1. Control Box

Procedure:

1) Please remove the drilling template from the manual.
   (See page 45.)
2) Clean the installation area and stick the template on it.
3) Do the installations as described in chapter 4.6.
   (See page 18.)

11.2. Warning Light

Procedure:

1) Please remove the drilling template from the manual.
   (See page 46.)
2) Clean the installation area and stick the template on it.
3) Do the installations as described in chapter 4.7.
   (See page 19.)

Figure 37: Drilling Template Control Box

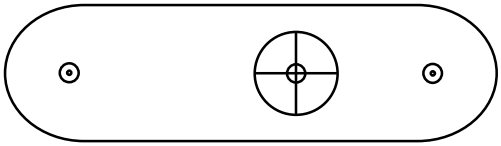


Figure 38: Drilling Template Warning Light

Overview revision changes		
Revision	**Reason**	**Date**
Rev. 1.2	First version	

Let `s reduce your Drag...

For all further support, please contact us:

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